Nassau County 32645

Department of Public Works

Staff Summary

Subject: Standardization of SCADA system HMI software
Department Public Works
Commissioner Shila Shah-Gavnoudias
Department Head Signature Shila Shah
Project Manager Name: Joseph L. Davenport

Date: July 22, 2015
Vendor Name: Not applicable
Contract Number Not applicable
Personal Services ____ Blanket Res ____ Calendar ____ Bid ____ Rules Comm. ____
Contract Manager Name: Not applicable

Proposed Legislative Action					
	To	Date	Approval	Info	Other
	Assgn Comm				
	Rules Comm				
	Full Leg				

Internal Approvals			
Date& Init.	Approval	Date & Init.	Approval
	Dept. Head	8/18/15	Counsel to C.E.
7/23	Budget		County Atty.
8/4/15	Deputy C.E.	8/4/15	County Exec.

Narrative

Purpose:

Recommendation for sole-source procurement for Human Machine Interface (HMI) software platform for Supervisory Control and Data Acquisition (SCADA) improvements for wastewater facilities.

Discussion:

It is essential that the software platform that serves as the primary HMI system for multiple treatment plants, as well as remote facilities (i.e. pump stations), should be the same across all of the facilities. A single HMI platform is critical for the following reasons: a single HMI platform allows the operations and maintenance staff to be trained on a single software package; standardization will be difficult when multiple HMI platforms are used; any needed third-party software applications will need to be compatible with the HMI software, if multiple HMI platforms are utilized, it is likely that compatibility issues will arise; and, multiple HMI software platforms would likely have differing hardware requirements, would necessitate multiple software support agreements, and require additional time and effort for maintenance and upgrades, etc.; all resulting in increased costs.

Impact on Funding:

None. The HMI software is required for the SCADA improvements; this resolution is for standardizing the HMI software.

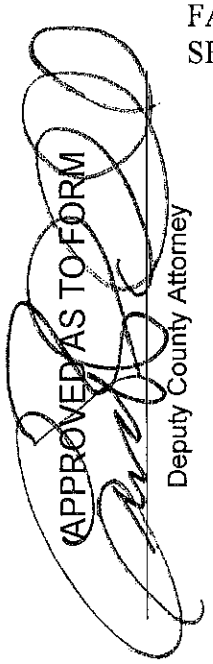
Recommendation:

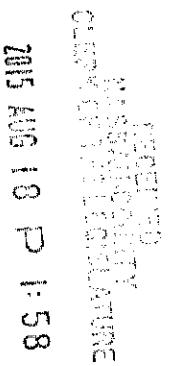
Approve as submitted.

2015 AUG 18 P 1:57
RECEIVED
NASSAU COUNTY
CLERK OF THE LEGISLATURE

RESOLUTION NO. - 2015

A RESOLUTION AUTHORIZING THE STANDARDIZATION OF SCADA SYSTEM HMI SOFTWARE PLATFORM FOR ALL COUNTY WASTEWATER FACILITIES PURSUANT TO NEW YORK STATE GENERAL MUNICIPAL LAW SECTION 103(5)





WHEREAS, the Department of Public Works is preparing bid specifications for the Supervisory Control and Data Acquisition (SCADA) improvements for the County owned wastewater treatment plants and various pumping stations; and

WHEREAS, the Department represents that a critical aspect of the SCADA improvements is the human machine interface (HMI) software platform; and

WHEREAS, based upon its experience operating the County's wastewater facilities, and its review of HMI software, the Department has concluded that it is essential that the software platform that serves as the primary HMI system for multiple treatment plants, as well as remote facilities (i.e. pump stations), should be the same across all of the facilities. Based upon its knowledge and experience the Department represents that a single HMI platform is critical for the following reasons:

- A single HMI platform allows the operations and maintenance staff to be trained

on a single software package. Having multiple software types would require plant staff to be trained and knowledgeable in the operating, maintaining, and configuring of multiple systems.

- Standardization will be difficult when multiple HMI platforms are used. Symbols may appear and animate differently; and, alarms on the two (2) systems will likely function differently in how they appear and how they are acknowledged; and, HMI security will likely function differently on different platforms. These differences may increase the chances for an error to occur in the operation of the facilities.

- Any needed third-party software applications, such as a computerized maintenance management system, will need to be compatible with the HMI software. If multiple HMI platforms are utilized, it is likely that compatibility issues will arise.

- Multiple HMI software platforms would likely have differing hardware requirements, would necessitate multiple software support agreements, and require additional time and effort for maintenance and upgrades, etc.; all resulting in increased costs; and

WHEREAS, as represented by the Department, the wastewater facilities already utilize software developed by GE Cimplicity for the control of several individual processes (local control stations), the Department strongly advocates expanding the use of GE Cimplicity for the HMI platform to eliminate the need to modify the existing local control stations and continues use of software with which the operations staff is already familiar; and

WHEREAS, New York General Municipal Law § 103(5) provides that this Legislature may adopt a resolution by a three-fifths vote of its members authorizing standardization of equipment, now therefore, be it

RESOLVED, that this Legislature hereby approves and authorizes the standardization of the HMI software platform for all County wastewater facilities for

reasons of efficiency and economy as set forth herein and in accordance with New York State General Municipal Law § 103(5); and be it further

RESOLVED, that based on the representations of the Department of Public Works and the recommendation of the Commissioner of the Department, the County Executive is authorized to standardize the HMI software platform for all County wastewater facilities and specify the purchase and installation of GE Cimplicity software.

County of Nassau
Inter-Departmental Memo

To: **Clerk of the County Legislature**

From: **County Attorney**

Date: **March 10, 2015**

Subject: **RESOLUTION – Orig. Dept. – Department of Public Works**

A resolution authorizing the standardization of SCADA system HMI software platform for all County wastewater facilities pursuant to New York General Municipal Law Section 103(5)

The above-described document attached hereto is forwarded for your review and approval and subsequent transmittal to the County Legislature for inclusion upon their calendar.

CARNELL T. FOSKEY
County Attorney

By Gerald R. Podlesak
Deputy County Attorney
Appeals

EDWARD P. MANGANO
County Executive

COUNTY OF NASSAU
OFFICE OF THE NASSAU COUNTY EXECUTIVE
1550 Franklin Avenue
Mineola, New York 11501

RECOMMENDATION OF THE COUNTY EXECUTIVE FOR THE ADOPTION OF A RESOLUTION AUTHORIZING THE STANDARDIZATION OF SCADA SYSTEM HMI SOFTWARE PLATFORM FOR ALL COUNTY WASTEWATER FACILITIES

July 22, 2015

NASSAU COUNTY LEGISLATURE
THEODORE ROOSEVELT EXECUTIVE & LEGISLATIVE BUILDING
1550 FRANKLIN AVENUE
MINEOLA, NY 11501

HONORABLE LEGISLATORS:

The Department of Public Works is preparing bid specifications for improvements to the Supervisory Control and Data Acquisition (SCADA) for the County owned wastewater treatment plants and various pumping stations. The human machine interface (HMI) software platform is a critical aspect of these SCADA improvements. This Resolution authorizes the standardization of the HMI platform to facilitate control and efficiency. I urge its adoption by the Legislature.

Very truly yours,

for Edward P. Mangano
County Executive
Nassau County

COUNTY OF NASSAU
DEPARTMENT OF PUBLIC WORKS
Inter-Departmental Memo

TO: Office of the County Executive
Att: Richard R. Walker, Chief Deputy County Executive

FROM: Department of Public Works

DATE: October 30, 2014

SUBJECT: Supervisory Control and Data Acquisition (SCADA) Improvements
For Wastewater Facilities
Recommendation for Sole-Source Procurement for Human Machine Interface (HMI)
Software Platform
Project No. 35117-02

The Department has previously retained the engineering consulting firm of CDM Smith for design services regarding Supervisory Control and Data Acquisition (SCADA) Improvements for all County wastewater facilities. Based upon the firm's prior experience with similar projects and their knowledge of the County's wastewater facilities, CDM Smith has recommended that the County select a single sole source manufacturer for the human machine interface (HMI) component of the SCADA improvements.

It is essential that the software platform that serves as the primary HMI system for multiple treatment plants, as well as remote facilities (i.e. pump stations), should be the same across all of the facilities. A single HMI platform is critical for the following reasons:

- A single HMI platform allows the operations and maintenance staff to be trained on a single software package. Having multiple software types would require plant staff to be trained and knowledgeable in the operating, maintaining, and configuring of multiple systems.

- Standardization will be difficult when multiple HMI platforms are used. Symbols may appear and animate differently; and, alarms on the two (2) systems will likely function differently in how they appear and how they are acknowledged; and, HMI security will likely function differently on different platforms. These differences may increase the chances for an error to occur in the operation of the facilities.

- Any needed third-party software applications, such as a computerized maintenance management system, will need to be compatible with the HMI software. If multiple HMI platforms are utilized, it is likely that compatibility issues will arise.

- Multiple HMI software platforms would likely have differing hardware requirements, would necessitate multiple software support agreements, and require additional time and effort for maintenance and upgrades, etc.; all resulting in increased costs.

Additional justification for the sole-source HMI platform is contained within the attached memo prepared by CDM Smith.

Considering that the wastewater facilities already utilize software developed by GE Cimplicity for the control of several individual processes (local control stations), expanding the use of GE Cimplicity for the HMI platform eliminates the need to modify the existing local control stations and continues use of software with which the operations staff is already familiar.

Subject: Supervisory Control and Data Acquisition (SCADA) Improvements
For Wastewater Facilities
Recommendation for Sole-Source Procurement for Human Machine Interface (HMI)
Software Platform
Project No. 35117-02

Based upon the foregoing, it is the Department's recommendation that GE Cimplicity be used as the sole-source HMI software platform for the wastewater facilities.

Please signify below if you approve or disapprove of our recommendation after which we will implement the next appropriate Departmental procedure(s).

for Shila Shah-Gavnoudias
Commissioner

SSG:KGA:JLD:cs
Attachments
c: Richard P. Millet, Chief Deputy Commissioner
Kenneth G. Arnold, Assistant to Commissioner
Joseph L. Davenport, Unit Head, Water/Wastewater Engineering Unit
Jane Houdek, Attorney for Public Works

APPROVED:

10/29/14

Richard R. Walker Date
Chief Deputy County Executive

DISAPPROVED:

Richard R. Walker Date
Chief Deputy County Executive

CDM Smith

Memorandum

To: *Joe Davenport*

From: *Joe LaRosa*

Date: *October 15, 2014*

Subject: *Justification for a Single Human Machine Interface Software Platform*

During the needs assessment workshop held on April 23, 2014, a discussion took place on the importance of the County standardizing on a single human-machine interface (HMI) SCADA software platform to be utilized at the three wastewater treatment plants. This memo summarizes the benefits of having a single platform and the pitfalls of allowing multiple packages to be utilized.

On the plant floor, operator interface terminals (OITs) are often utilized to provide touchscreen graphic displays for local monitoring and control of the equipment. Because plant process systems are often provided by different vendors under separate contracts, the OITs provided for these systems may be from multiple manufacturers. This is very commonplace and accepted in the water and wastewater industry. Although the OITs are a form of HMI, they typically are not intended to provide much more than a means of local monitoring and control.

An HMI SCADA software platform that serves as the primary HMI system for the entire treatment facility, or in the case of Nassau County, for multiple treatment facilities should be handled differently. Operators will utilize this HMI software in the plant control room to monitor and control the entire plant as well as potentially the other two treatment plants. A single platform is therefore essential. Following are the most significant reasons why a single HMI SCADA platform is crucial, as opposed to allowing multiple HMI platforms to be provided:

- A single HMI platform allows operators to monitor and control all plant processes from a single workstation. All plant alarms are annunciated on the same workstation. If multiple HMI applications are utilized, then operators would need to focus their attention on multiple workstations to ensure that alarms are not overlooked.
- HMI software packages require annual support fees to receive upgrades, etc. Multiple packages would add to these annual costs.
- A single HMI package allows all Nassau County facilities to be integrated together so that each facility can monitor the other facilities from one workstation. If each facility utilizes a different HMI platform, then they cannot be integrated together into a single application.

- HMI SCADA software needs to reside on a server computer. Typically this is configured in a redundant configuration (two server computers with one primary and one backup). If multiple HMI platforms are utilized, each would need to have its own pair of servers. This significantly adds hardware and software costs as well as maintenance costs.
- HMI software manufacturers often release product updates and therefore require maintenance. Multiple packages will require more maintenance time and tracking of multiple updates.
- Third-party applications, such as computerized maintenance management systems, will need to be compatible with the plant's HMI SCADA software. If multiple HMI platforms are utilized, compatibility issues may arise.
- Standardization will be difficult when multiple HMI SCADA platforms are used. The general look and feel of the multiple systems will not be identical. Symbols may appear and animate differently; alarms on the two systems will likely function differently in how they appear and how they are acknowledged; and HMI security will likely function differently on the two different platforms.
- A single HMI SCADA platform allows county staff to be trained on a single software package. Having multiple packages would require plant staff to be trained on operating, maintaining, and configuring multiple systems.

As we finalize the SCADA standards for Nassau County, we will be developing a list of acceptable manufacturers for equipment and software to be installed at the Nassau County facilities. While many of the items on the list will have several acceptable manufacturers, we plan to only include one acceptable software package for the HMI SCADA platform for the plants. As agreed upon by the County and CDM Smith at the needs assessment workshop, this package will be GE Cimplicity. The primary reason for this decision is that Cimplicity is the HMI SCADA package already in use at the Cedar Creek Water Pollution Control Plant (WPCP) and at the Bay Park Sewage Treatment Plant (STP). At the Cedar Creek WPCP, Cimplicty is the HMI software used for the dewatering, thickening, and diesel engine generator systems. At the Bay Park STP, Cimplicity is used for the odor control, gravity belt thickener, and diesel engine generator systems. By utilizing Cimplicity, it will limit the need to modify these existing systems; additionally operations staff have also gained a level of familiarity with them.

The sewage and storm water pumping stations are controlled separately from the treatment plants, so it is therefore are not as critical for the pumping stations to utilize the same HMI SCADA package as the plants. However, a single software platform for all the stations is recommended. As we continue to vet out the remote communication method that will be utilized for the pump stations, we will confirm whether a different HMI SCADA package that is more tailored to handle remote communications should be utilized for these locations.

Please feel free to contact me if you have any questions or comments.